2003 FAA National Software Conference
Update to the Software Review Job Aid

Update to the Software Review Job Aid

Leanna Rierson
September 16, 2003
Leanna.Rierson@faa.gov

1

Presentation Outline

- Background
- Four Parts of the Job Aid
- Appendices and Supplements
- Major Deltas
- Tailoring the Job Aid
- Schedule
- Feedback (if time permits)
- Summary

2

2003 FAA National Software Conference Update to the Software Review Job Aid

Background

- Job Aid was first released in June 1998
- Original purpose of the Job Aid was to:
  - Standardize the Software Review Approach
  - Provide a Tool for FAA Engineers & Designees to Perform the Software Review
  - Improve the Quality of Software Reviews
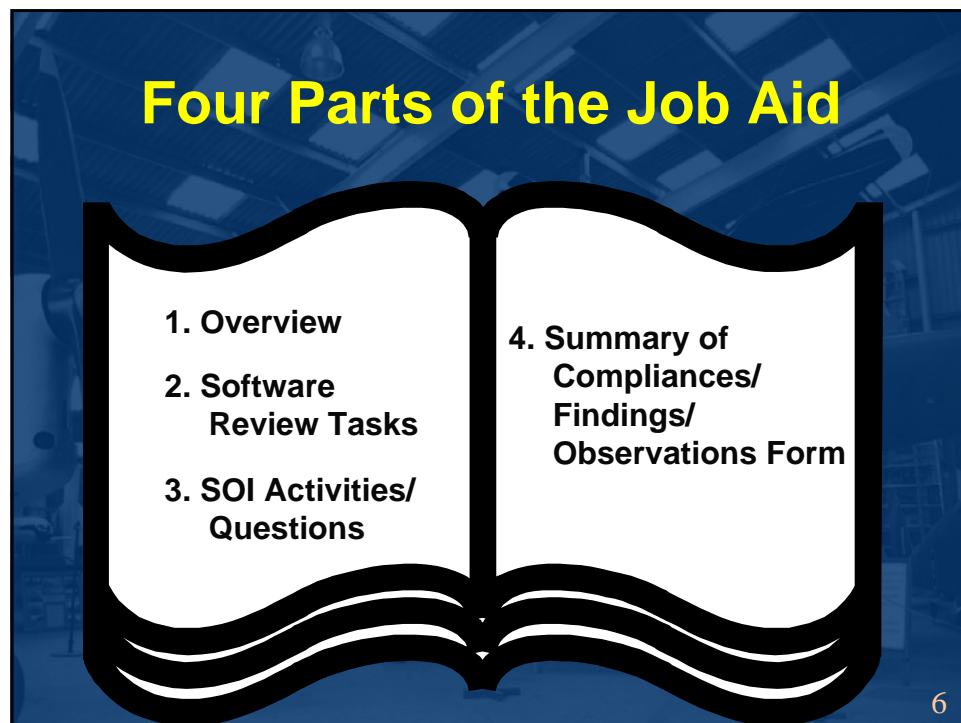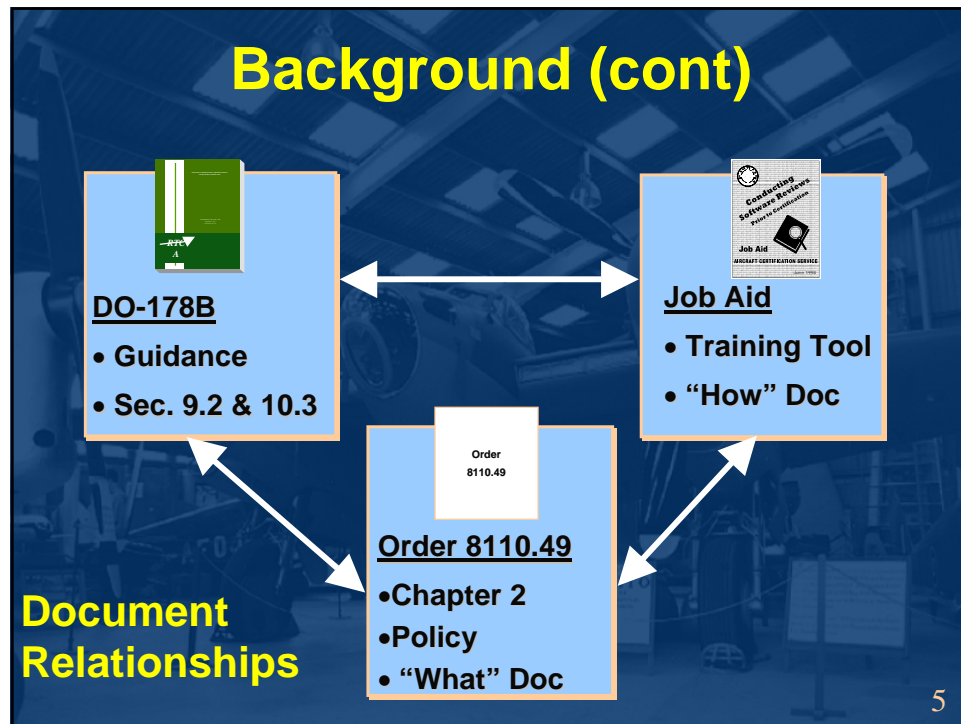 - Inform Applicants of the FAA's Approach

3

Background (cont)

- Since 1998 a number of items have been completed (e.g., Order 8110.49, CAST papers, MC/DC tutorial, software training, etc.)
- Purpose of Job Aid update:
  - To address policy that has matured
  - To correct errors
  - To implement lessons learned

4

Leanna Rierson

2003 FAA National Software Conference
Update to the Software Review Job Aid

Background (cont)

DO-178B
- Guidance
- Sec. 9.2 & 10.3

Order 8110.49

Order 8110.49
- Chapter 2
- Policy
- "What" Doc

Job Aid
- Training Tool
- "How" Doc

Document Relationships

5

Four Parts of the Job Aid

1. Overview

2. Software Review Tasks

3. SOI Activities/ Questions

4. Summary of Compliances/ Findings/ Observations Form

6

Leanna Rierson

2003 FAA National Software Conference Update to the Software Review Job Aid
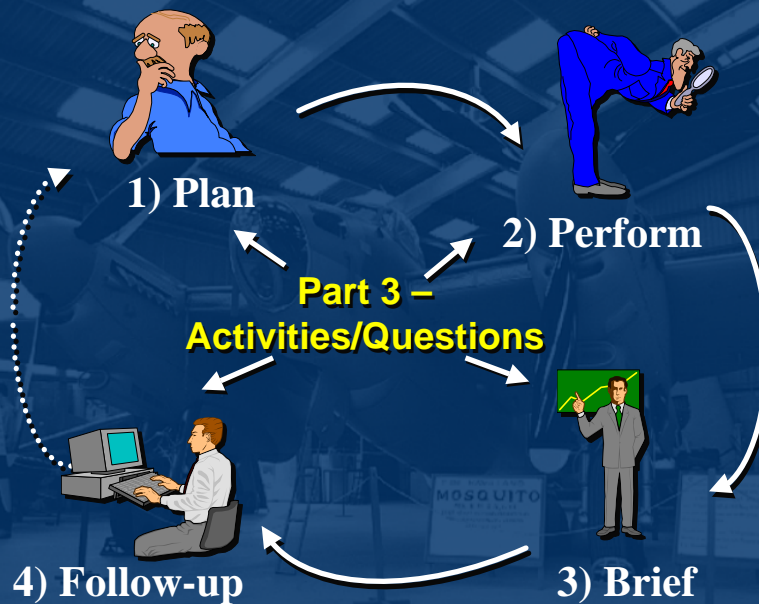
Part 1 - Overview

- **Purpose**
- **Layout**
- **Stakeholders**
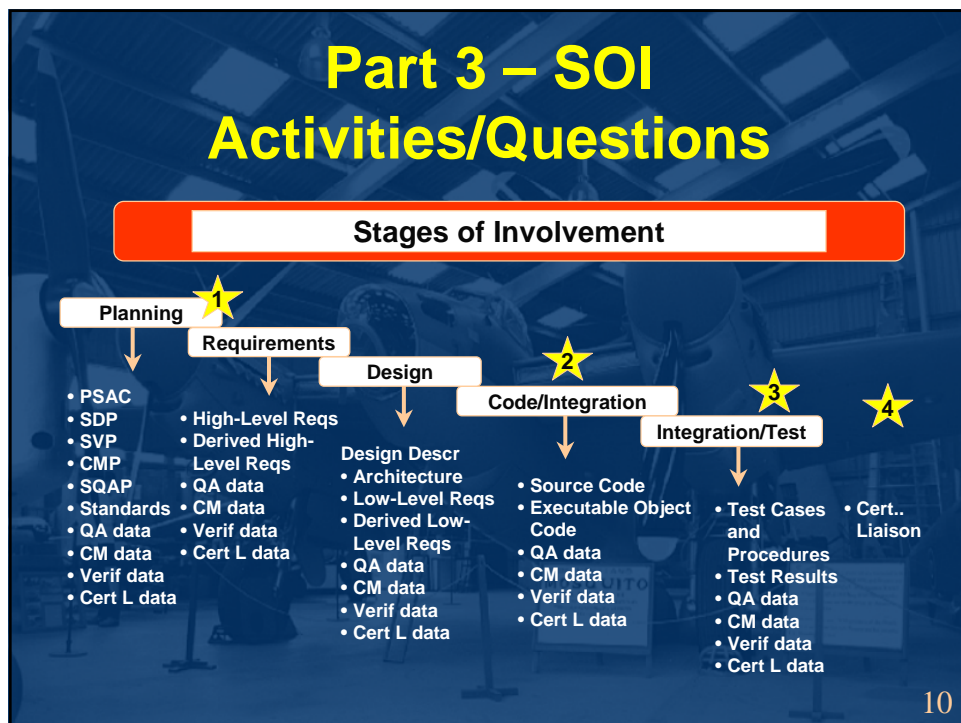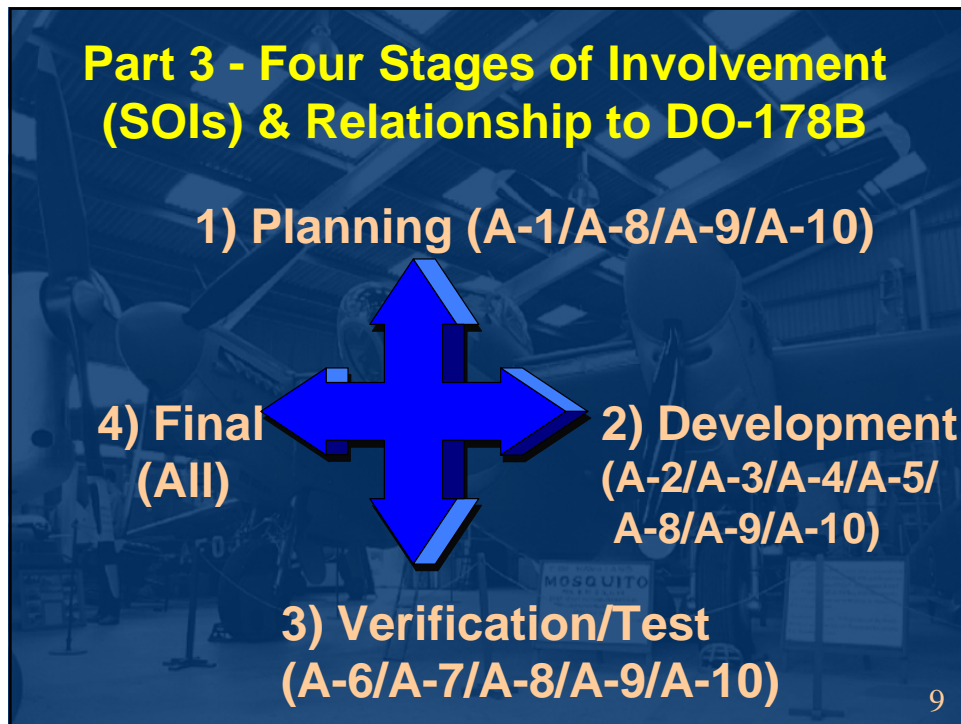- **Review Types**
- **Tie To Level of FAA Involvement Assessment**

7

Part 2 – Software Review Tasks

1) Plan

2) Perform

Part 3 – Activities/Questions

4) Follow-up

3) Brief

8

Leanna Rierson

4

2003 FAA National Software Conference Update to the Software Review Job Aid

Part 3 - Four Stages of Involvement (SOIs) & Relationship to DO-178B

1) Planning (A-1/A-8/A-9/A-10)

4) Final (All)

2) Development (A-2/A-3/A-4/A-5/ A-8/A-9/A-10)

3) Verification/Test (A-6/A-7/A-8/A-9/A-10)

9

Part 3 – SOI Activities/Questions

Stages of Involvement

Planning ⭐1

Requirements

Design

Code/Integration ⭐2

Integration/Test ⭐3 ⭐4

• PSAC
• SDP
• SVP
• CMP
• SQAP
• Standards
• QA data
• CM data
• Verif data
• Cert L data

• High-Level Reqs
• Derived High-Level Reqs
• QA data
• CM data
• Verif data
• Cert L data

Design Descr
• Architecture
• Low-Level Reqs
• Derived Low-Level Reqs
• QA data
• CM data
• Verif data
• Cert L data

• Source Code
• Executable Object Code
• QA data
• CM data
• Verif data
• Cert L data

• Test Cases and Procedures
• Test Results
• QA data
• CM data
• Verif data
• Cert L data

• Cert.. Liaison

10

Leanna Rierson

2003 FAA National Software Conference Update to the Software Review Job Aid

Part 3 – SOI Activities/Questions (cont)

Item #	Evaluation Activity/Question	DO-178B objective
1.1	Review all plans (PSAC, SCMP, SQAP, SDP, SVP, software tool plans, etc.). Based on your review of all the plans, consider the following questions:	
1.1.1	Has the planning data been signed and put under CM? Verify there is objective evidence of coordination (e.g., authorized signatures) from all organizations controlled and affected by the software plans.	A-1, #1-7
1.1.2	Are plans and standards cited complete, clear, and consistent?	A-1, #1,7

11

Part 4 – Summary Tables

Ref #	Objective Summary (Numbers are DO-178B section references)	Summary of Compliances/ Findings/Observations	Level	Job Aid Ref
1-1	Software development and integral processes activities are defined. 4.1 a, 4.3		A/B/C/D	1.1, 1.3, 1.4, 1.6, 1.7, 1.8, 1.10, 1.11, 4.8
1-2	Transition criteria, inter-relationships and sequencing among processes are defined. 4.1b, 4.3		A/B/C	1.1, 1.3, 1.4, 1.6, 1.7, 1.11, 4.8
1-3	Software life cycle environment is defined. 4.1c		A/B/C	1.1, 1.2, 1.3, 1.4, 1.7, 1.10, 1.11, 4.8

Leanna Rierson

Appendices/Supplements of the Job Aid

- **Appendices**
  - A: Alternate Recording Approach
  - B: References

- **Supplements**
  - 1: Typical FAA Roles
  - 2: Typical Designee Roles
  - 3: Examples
  - 4: Worksheets

13

Major Changes to Job Aid (see pages iv – v)

- **Implemented Lessons Learned From:**
  - Policy Development (e.g., Order 8110.49)
  - Real-Time Software Development Course
  - Object-Oriented Technology Workshops

14

2003 FAA National Software Conference
Update to the Software Review Job Aid

Major Changes to Job Aid (cont)

Change	Rationale
Combined Section 1-3	To condense and clarify
Added Supplements 1, 2, 4	Additional information for reviewers
Moved Appendix A (examples) to Supplement 3	To reduce size of Job Aid
Added "Compliances" Concept	To document Compliances, in addition to Findings & Observations
Removed Checkmark Column in Activities/Questions Tables	To address the checklist mentality

15

Major Changes to Job Aid (cont)

Change	Rationale
Added 1.7.7 - 1.7.11 & 2.3 - 3.5	To implement questions from MC/DC Tutorial
Added 1.10, 2.5, & 2.6	To address real-time software issues
Added 1.11 & 2.16	To address object-oriented concerns
Added 2.12 - 2.14 & 3.15	To address memory mgt, tools, partitioning/protection (as appropriate)
Added 2.1.14, 2.15, & 3.6.2	To address RTOS issues (as appropriate)

16

Leanna Rierson

2003 FAA National Software Conference Update to the Software Review Job Aid

Major Changes to Job Aid (cont)

Change	Rationale
Moved 2.5 to 3.6	To put integration objectives in SOI #3 instead of SOI #2
Added 3.7	To address data and control coupling analysis
Replaced "ASI" with "QA/CM Team Member"	To reflect current paradigm of FAA review team
Added References (App B)	To provide reference to relevant information

17

Tailoring the Job Aid (1/2)

- Prior to Review, Evaluate Activities/ Questions
- Delegate Activities/ Questions to Designees, as Appropriate
- Add Activities/Questions, as Appropriate
- Delete Activities/Questions, as Appropriate
- Work with A Team

18

Leanna Rierson

2003 FAA National Software Conference
Update to the Software Review Job Aid

Tailoring the Job Aid (2/2)

- During the Review, the Situation May Lead to a Change in Direction
- Job Aid is Designed For Flexibility
- Job Aid is NOT A CHECKLIST

19

Schedule

- A preliminary version of the Job Aid Update is provided for conference attendees.
- Please provide any comments on the Job Aid to Leanna.Rierson@faa.gov by Sept 30, 2003.
- Goal is to complete and post updated Job Aid by December 31, 2003.

20

Leanna Rierson

10

2003 FAA National Software Conference
Update to the Software Review Job Aid

Feedback?

21

Summary

- We've learned a lot over the last 5 years
- The Job Aid has been updated to address lessons learned
- Your comments are welcome (due Sept 30)

22

Leanna Rierson

11